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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/802,088	03/16/2004	Chinping Yang	50TS403.01/1695	4064
24272	7590	02/25/2009	EXAMINER	
Gregory J. Koerner Redwood Patent Law 1291 East Hillsdale Boulevard Suite 205 Foster City, CA 94404			PERUNGAVOOR, SATHYANARAYA V	
			ART UNIT	PAPER NUMBER
			2624	
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			02/25/2009	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/802,088

**Applicant(s)**

YANG ET AL.

**Examiner**

SATH V. PERUNGAVOOR

**Art Unit**

2624

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 November 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6, 9, 10, 12-14, 21-24, 26, 29, 30, 32-34 and 41-44 is/are rejected.
- 7) ☒ Claim(s) 5, 7, 8, 11, 15-20, 25, 27, 28, 31 and 35-40 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Final Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Applicant(s) Response to Official Action***

- [1] The response filed on November 3, 2008 has been entered and made of record.

### ***Response to Arguments/Amendments***

- [2] Presented arguments have been fully considered, but are rendered moot in view of the new ground(s) of rejection necessitated by amendment(s) initiated by the applicant(s).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

- [3] Claims 1, 4, 6, 9, 10, 12-14, 21, 24, 26, 29, 30, 32-34 and 41-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Atashroo [US 5,703,970] in view of Javidi [US 6,519,340 B1].

Regarding claim 1, Atashroo discloses the following claim limitations:

A system for efficiently performing a pattern matching procedure using an electronic apparatus, comprising: an enrollment manager that performs an image conversion procedure for converting an initial reference image into a reference template (*i.e. FFT of the first image*), said image conversion procedure including ~~a binarization procedure~~ and a symmetrical reduction procedure (*i.e. storing the first (N/2+1) points*), said

~~binarization procedure converting a non-binary complex number format into a binary number format~~ [col. 3, ll. 64-67; col. 4, ll. 55-58]; and a verification manager that converts an initial test image into a transformed test image (*i.e. FFT of the second image*), said verification manager then combining said reference template (*i.e. FFT of the first image*) and said transformed test image (*i.e. FFT of the second image*) into a correlation image (*i.e. cross correlation*), said verification manager analyzing matching characteristics of said correlation image to determine whether said initial test image matches said initial reference image [col. 4, ll. 20-24; col. 5, ll. 44-65].

Atashroo does not explicitly disclose the following claim limitations:

A binarization procedure converting a non-binary complex number format into a binary number format.

However, in the same field of endeavor Javidi discloses the deficient claim limitations, as follows:

A binarization procedure converting a non-binary complex number format into a binary number format [col. 6, ll. 20-30].

It would have been obvious to one with ordinary skill in the art at the time of invention to modify the teachings of Atashroo with Javidi and binarize the images the motivation being to obtain reduced computational load [col. 1, ll. 62-64].

Regarding claim 4, Javidi meets the claim limitations, as follows:

The system of claim 1 wherein said enrollment manager performs a first binarization step to create initial binarization values for said binarization procedure by substituting a decimal value of "1" for all complex coefficients from said initial

reference image that are greater than or equal to zero (*i.e.*  $\text{Re}[\varphi(x)] \geq 0$ ), said enrollment manager also substituting a decimal value of "-1" for all of said complex coefficients that are less than zero (*i.e.*  $\text{Re}[\varphi(x)] < 0$ ), said initial binarization values then being utilized for any further calculations during said pattern matching procedure [col. 6, ll. 20-30].

Regarding claim 6, Atashroo meets the claim limitations, as follows:

The system of claim 1 wherein said initial reference image is converted by a single Fast Fourier Transform procedure (*i.e. operations are still a single Fourier transform even if they performed into two steps*) into an FFT reference image that exhibits symmetrical characteristics across individual complex pixel values, said enrollment manager performing said symmetrical reduction procedure (*i.e. storing the first  $(N/2+1)$  points*), on said FFT reference image to produce a reduced reference image to conserve processing requirements and memory requirements, said FFT reference image being divided during said symmetrical reduction procedure into a reduced portion that is stored as said reference template, and a discarded portion that is not utilized during said pattern matching procedure [col. 4, ll. 45-65].

Regarding claim 9, Atashroo meets the claim limitations, as follows:

The system of claim 1 wherein said enrollment manager converts said initial reference image into an FFT reference image by performing a Fast Fourier Transform procedure upon said initial reference image [col. 3, ll. 64-67; col. 4, ll. 55-58].

Regarding claim 10, Javidi meets the claim limitations, as follows:

The system of claim 9 wherein said enrollment manager performs a two-step binarization procedure upon said FFT reference image to produce a binarized reference image that is stored with a single binary bit representing each complex pixel value coefficient [col. 6, ll. 20-30].

Regarding claims 12-14, 21, 24, 26, 29, 30, 32-34 and 41-44 all claimed limitations are set forth and rejected as per discussion for claims 1, 4, 6, 9 and 10.

[4] Claims 2, 3, 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Atashroo [US 5,703,970] in view of Javidi [US 6,519,340 B1] further in view of Mukohzaka [US 5,878,157].

Regarding claim 2, Atashroo and Javidi meet the claim limitation as set forth in claim 1.

Atashroo and Javidi do not explicitly disclose the following claim limitations:

2. The system of claim 1 wherein an image capture device provides said initial reference image for creating said reference template, said pattern matching procedure utilizing said reference template to verify a user identity of a system user corresponding to said initial test image.
3. The system of claim 1 wherein said initial reference image and said initial test image each includes image data that represents a user fingerprint or a user face of a corresponding system user.

However, in the same field of endeavor Mukohzaka discloses the deficient claim limitations, as follows:

2. The system of claim 1 wherein an image capture device provides said initial reference image for creating said reference template (*i.e.* S201), said pattern matching procedure utilizing said reference template (*i.e.* S210) to verify a user identity of a system user corresponding to said initial test image (*i.e.* S215) [figs. 2 and 3].
3. The system of claim 1 wherein said initial reference image and said initial test image each includes image data that represents a user fingerprint (*i.e.* S201 and S211) or a user face of a corresponding system user [figs. 2 and 3].

It would have been obvious to one with ordinary skill in the art at the time of invention to modify the teachings of Atashroo and Javidi with Mukohzaka and apply Fourier correlation to fingerprint verification, the motivation being fast verification [*col. 2, ll. 15-20*].

Regarding claims 22 and 23, all claimed limitations are set forth and rejected as per discussion for claims 2 and 3.

### ***Allowable Subject Matter***

[5] Claims 5, 7, 8, 11, 15-20, 25, 27, 28, 31 and 35-40 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Conclusion***

[6] Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

### ***Contact Information***

[7] Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mr. Sath V. Perungavoor whose telephone number is (571) 272-7455. The examiner can normally be reached on Monday to Friday from 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Matthew C. Bella whose telephone number is (571) 272-7778, can be reached on Monday to Friday from 9:00am to 5:00pm. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished



Art Unit: 2624

applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dated: February 25, 2009

/Matthew C Bella/  
Supervisory Patent Examiner,  
Art Unit 2624  

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